Honors Chemistry Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Dr. Wexler  
Radioactive Decay Half-Life Formula Worksheet 2

1. A sample of ancient wood from an excavation site is found to contain 1/8 as much C-14 as is present in the wood of a living tree. What is the approximate age in years, of this sample of wood. The half-life of C-14 is 5730 years.

2. Ra-226 has a half-life of 1600 years and decays by alpha emission.

A. What period of time will be required for 20. grams of this radioisotope to decay to 5.0 grams?

B. What will be the identity of the other 15 grams? Write the nuclear decay equation.

3. You are given 562g of a radioisotope with a half-life of 500,000 years. After a certain period of time has elapsed, only 0.105g is expected to left. How much time will have elapsed?

4. Gallium-67 (t1/2 = 78.25 hrs) is used in the medical diagnosis of certain kinds of tumors. If you ingest a compound containing 0.015mg of this isotope, what mass (in mg) remains in your body after 13 days assuming none is excreted?

Hint: convert days to hours, then calculate the number of half-lives. Apply the half-life formula A = Ao x (1/2)n, where n = time/t1/2 = number of half-lives, A = remaining isotope, and Ao is the initial amount of isotope.